Water Laboratory Alliance

Background

Homeland Security Presidential Directive 9 (HSPD 9) directed EPA to develop robust, comprehensive, and fully coordinated surveillance and monitoring systems…for water quality that provides early detection and awareness of disease, pest, or poisonous agents, and to develop nationwide laboratory networks for…water quality that integrate existing Federal and State laboratory resources, are inter-connected, and utilize standardized diagnostic protocols and procedures. In response to HSPD 9, EPA's Water Security Division (WSD) in the Office of Water proposed and initiated development of a Contaminant Warning System, i.e., the Water Security Initiative, and the Water Laboratory Alliance (WLA). The purpose of this Quick Reference Guide is to describe development of the WLA.

Purpose

The purpose of the WLA is to provide the drinking water sector with an integrated nationwide network of laboratories with the analytical capabilities and capacity to support monitoring and surveillance, response, and remediation to intentional and unintentional drinking water supply contamination events involving chemical, biological, and radiological contaminants.

Approach for Development

The WLA is being developed based on existing networks such as the Centers for Disease Control and Prevention (CDC) Laboratory Response Network (LRN). It leverages existing laboratory network capability, capacity, and infrastructure to fill gaps in national laboratory preparedness for drinking water analyses. Laboratory infrastructure that is being leveraged from other networks includes analytical methods, membership criteria, and critical materials, such as laboratory reagents.

The WLA integrates drinking water, wastewater, public health and environmental laboratories, and select commercial laboratories that currently provide analytical support to government agencies. The WLA will focus solely on drinking water and will be an integral part of EPA's Environmental Laboratory Response Network (eLRN). The eLRN is a network with a similar purpose as the WLA but focuses on analyses of all environmental matrices.

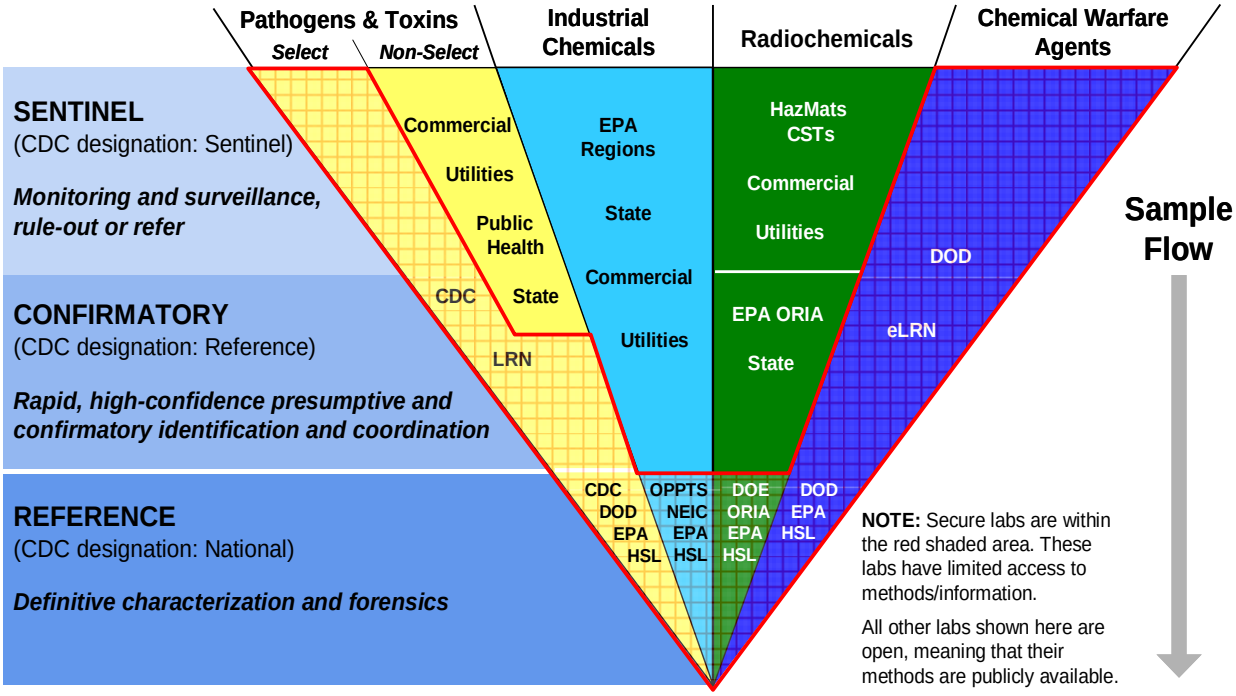
Structure of the WLA

The WLA structure (see Figure 1) consists of three tiers of laboratories: sentinel, confirmatory, and reference laboratories. WLA labs will be placed into a tier based on their existing capability and capacity. Laboratories would have the option to expand into another tier as interest and increased capability is developed.

Sentinel labs will perform routine monitoring and surveillance and will rule out or refer samples to confirmatory labs for further analysis. Confirmatory labs will perform rapid, high-confidence presumptive and confirmatory identification of samples referred by sentinel labs. These labs will have Biosafety Level (BSL) 2/3 facilities, limited surety capability for chemical warfare agents, and will be able to analyze radioactive samples. Reference labs will provide definitive characterization of chemical, biological, and radiochemical (CBR) agents and attribution of the source. These labs will also have highly specialized containment (BSL 3/4) facilities, chemical surety, and highly trained staff. Confirmatory and reference labs will likely participate in several laboratory networks including the LRN and the eLRN.

Laboratories participating in the WLA will provide support for biological (select and non-select) sample analysis, industrial chemical sample analysis, radiochemical sample analysis, and chemical warfare agent analysis or some combination of these depending on their capability.

Figure 1. Water Laboratory Alliance Structure



WLA to Date

A number of activities have been initiated in support of the Water Security Initiative pilot that will also support the fully functioning WLA. Activities completed to date in support of the Water Security Initiative pilot include: identifying priority contaminants of concern, methods, and method gaps for priority contaminants; developing data management and communication systems; preparing a sampling and analysis plan, as well as, sampling protocols and chain of custody forms for lab analyses; and establishing a local network of laboratories to augment the analytical capability of the pilot utility laboratory. Other WLA activities to date include: developing Regional Laboratory Response Plans, chemical method development and validation, and creating a formal partnership with the Association of Public Health Laboratories (APHL).

— Drinking Water Laboratory Response Preparedness Project. The WSD and EPA Regional Laboratory Chiefs are developing regional laboratory response preparedness plans to help regions with improving intra-regional laboratory preparedness for responding to actual or suspected contamination events. The objective of this project is to develop a customized region-specific laboratory response plan for each region. Each plan will be tested by conducting table top and functional testing exercises.

— Chemical Method Development and Validation. The WSD, with the support of EPA's National Homeland Security Research Center, has completed single laboratory validation of additional contaminants for Method 300.1 (inorganic compounds in drinking water) and a modified version of Method 532 (phenylurea compounds in drinking water). Single laboratory validation of additional contaminants for Method 525.2 (organic compounds in

drinking water) and multi-laboratory validation of Method 300.1 is currently underway. Multi-laboratory validation of the modified Method 532 is not currently being pursued. Liquid chromatography/mass spectrometry (LC/MS) methodologies are currently being explored for WSD contaminants of concern. The modification of existing methods to analyze for additional contaminants will help fill in current gaps in analytical techniques for the analysis of water samples.

— APHL Partnership. The WSD has entered into a Cooperative Agreement with APHL in order to establish a national home-base for environmental laboratories, enhance capability and capacity of environmental laboratories, and build education programs and tools for environmental labs. This partnership will enhance information flow to and from environmental laboratories and increase the awareness of environmental laboratories about water security issues.

Contact Us

For more information on the WLA, contact Latisha Mapp, EPA WSD (**Mapp.Latisha@epa.gov**). Information on EPA Water Security Division's activities, tools, products, and the latest scientific advances to protect drinking water and wastewater utilities is available online at **www.epa.gov/watersecurity**.